

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ROLAND CORPORATION,
Petitioner,

v.

INMUSIC BRANDS, INC.,
Patent Owner.

Case IPR2018-00396
Patent 8,785,758 B2

Before DEBRA K. STEPHENS, JENNIFER MEYER CHAGNON, and
KAMRAN JIVANI, *Administrative Patent Judges*.

JIVANI, *Administrative Patent Judge*.

DECISION

Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a) and 37 C.F.R. § 42.108(b)

I. INTRODUCTION

Roland Corporation (“Petitioner”)¹ requested an *inter partes* review of claims 1–21 (the “challenged claims”) of U.S. Patent No. 8,785,758 B2 (Ex. 1001, the “’758 patent”). Paper 6 (“Petition” or “Pet.”). inMusic Brands, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 10 (“Prelim. Resp.”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless it is determined that there is a reasonable likelihood that Petitioner will prevail with respect to at least one of the challenged claims. On April 24, 2018, the Supreme Court held that a decision to institute under 35 U.S.C. § 314(b) may not institute review on less than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355–56 (2018).

Applying these standards, and upon consideration of the information presented in the Petition and the Preliminary Response, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail with respect to at least one of the challenged claims because the Petition does not account fully for at least one element of each of the independent challenged claims. We, therefore, deny the Petition and do not institute an *inter partes* review.

II. BACKGROUND

A. *Related Proceedings*

Petitioner states the ’758 patent is at issue in *inMusic Brands, Inc. v. Roland Corporation*, Case No. 1:17-cv-00010 (D.R.I.). Pet. 1.

¹ Petitioner identifies Roland US as an additional real party in interest to the Petition. Pet. 1.

B. The '758 patent

The '758 patent discloses an electronic high-hat cymbal controller for use with an electronic drum set to “emulat[e] the playing characteristics” of acoustic high-hat cymbals. Ex. 1001, 1:16–18, 1:25–28. Figure 1 of the '758 patent depicts prior art acoustic high-hat cymbals, and is reproduced below.

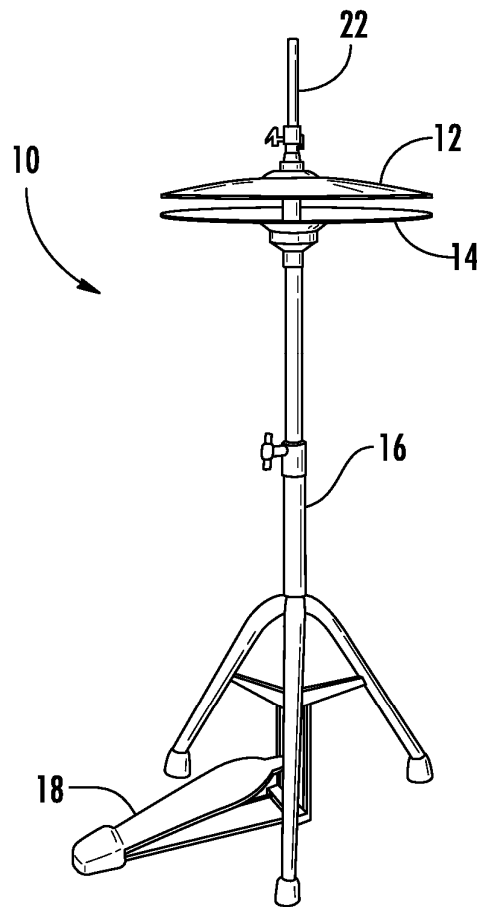


FIG. 1
(PRIOR ART)

As shown in Figure 1, “[a]n acoustic high-hat consists of two cymbals 12, 14, mounted in a stand 16 with a foot pedal 18.” *Id.* at 1:30–31. “The cymbals 12, 14 are mounted with the concave sides facing each other and the upper cymbal 12 can be moved down and up by pressing and releasing

the foot pedal 18.” *Id.* at 1:31–34. According to the ’758 patent, most high-hat cymbal controllers in electronic drum sets omit the lower cymbal of the acoustic high-hat pair, instead providing only two controllers: “one that emulates the upper cymbal and one that emulates the action of the foot pedal.” *Id.* at 1:48–52. This omission of the lower cymbal and separation of the foot pedal cause the electronic high-hat cymbal controller to look, feel, and move “quite different[ly] from the acoustic instrument it is meant to emulate.” *Id.* at 2:1–15.

The ’758 seeks to remedy the deficiencies above through an electronic controller that includes both upper and lower cymbals connected to a high-hat stand that is operable with a foot pedal. *Id.* at 2:34–37. “A foot pedal control module detects the position of the upper cymbal relative to the foot pedal control cymbal and generates and transmits a control signal proportional to the plunger position to a drum synthesizer.” *Id.* at 2:37–41. An embodiment of the ’758 patent’s invention, an electronic high-hat cymbal controller with cymbals open, is shown in Figure 3B reproduced below.

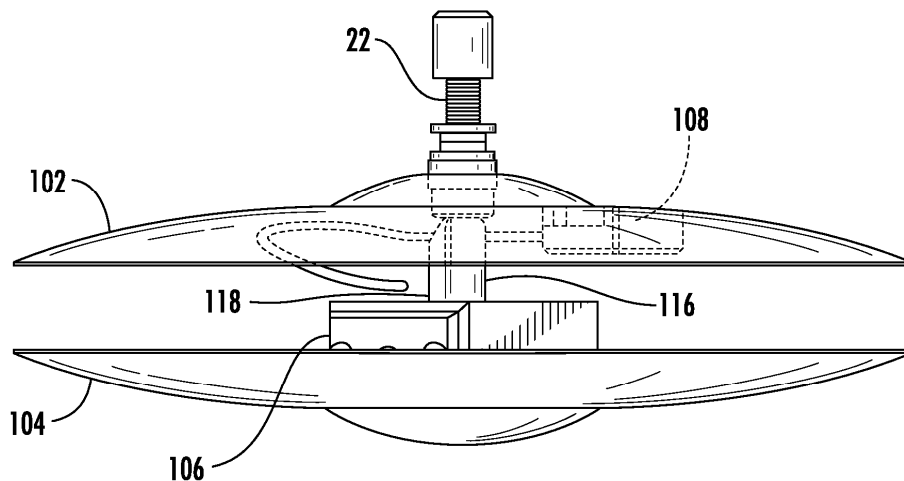
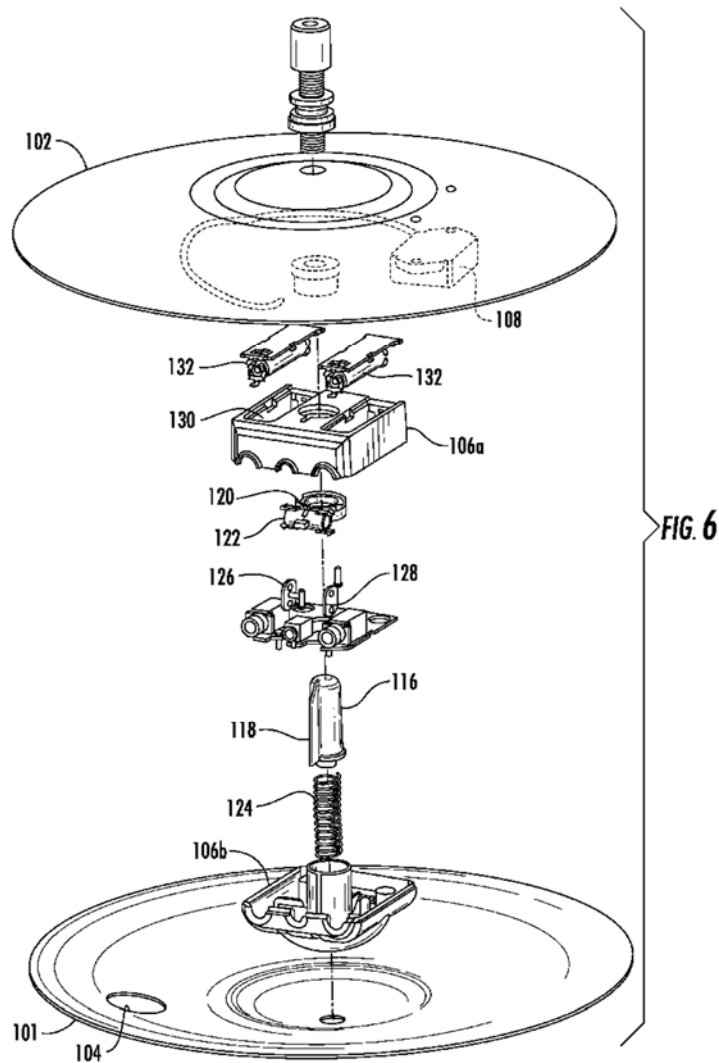


FIG. 3B

Figure 3B depicts foot pedal control module 106, which includes a position detector that senses the position of upper cymbal 102 relative to foot pedal control module 106. *Id.* at 4:21–23. Spring-loaded plunger 116, including shutter 118, extends above foot pedal control module 106. *Id.* at 4:23–25. Shutter 118 slides into channel 120 on sensor tunnel 122, which is depicted in an exploded view of the electronic high-hat cymbal controller, Figure 6 and reproduced below. *Id.* at 4:25–27.



As shown in Figure 6, when upper cymbal 102 is less than a predetermined distance from lower cymbal 104, plunger 116 is depressed and spring 124 is compressed. *Id.* at 4:27–30. Foot pedal control module 106 then generates a control signal proportional to the plunger 116 position and send the signal to the drum synthesizer. *Id.* at 4:30–33. In one embodiment, foot pedal control module 106 includes light source 126, such as an LED, and optical detector 128, such as a photo-resistor, positioned opposite light source 126. *Id.* at 4:34–38. Light source 126 and optical detector 128 detect the position of plunger 116. *Id.* at 4:39–41. More specifically, plunger 116 moves shutter 118 into channel 120 of sensor tunnel 122 and across the light path between light source 126 and optical detector 128, thereby changing the effective resistance presented to the drum synthesizer. *Id.* at 4:42–46. The '758 patent describes this optical sensor configuration as advantageous because it avoids “any signal quality dependency on parts that may repeatedly rub or press against each other, extending the effective life of the controller 100.” *Id.* at 4:46–49.

C. Illustrative Challenged Claims

Claims 1, 8, and 15 are independent. Claims 1 and 8 are illustrative of the claimed subject matter and are reproduced below.

1. An electronic hi-hat cymbal controller, comprising:
 - a hi-hat cymbal stand with a foot pedal configured to lift a control shaft;
 - a lower cymbal supported by the hi-hat cymbal stand;
 - an upper cymbal supported by the control shaft and oriented over the lower cymbal; and
 - a foot pedal control module comprising a position detector configured to detect the position of the control

shaft relative to the foot pedal control module, as the control shaft moves up and down the hi-hat cymbal stand, wherein an electrical signal generated by the foot pedal control module is proportional to the position of the control shaft relative to the foot pedal control module.

Ex. 1001, 5:22–34.

8. An electronic hi-hat cymbal controller, comprising:
 - a hi-hat cymbal stand with a foot pedal configured and arranged to mechanically lift a control shaft;
 - a lower cymbal supported by the hi-hat cymbal stand;
 - an upper cymbal supported by the control shaft and oriented over the lower cymbal; and
 - a foot pedal control module comprising a position detector configured to detect the position of the control shaft relative to the foot pedal control module as the control shaft moves up and down the hi-hat cymbal stand, by shining a light from a light source at an optical detector and using a mechanical shutter configured to move with the control shaft between the optical detector and the light source,
- wherein an electrical signal generated by the foot pedal control module is proportional to the position of the control shaft relative to the foot pedal control module.

Id. at 5:47–6:6.

D. Evidence Relied Upon

Petitioner bases its challenges on the following references:

1. The transcript of a YouTube video segments 1 and 2 (Ex. 1013), together with video files of segments 1 and 2 (Exs. 1014 and 1016) and printouts of the webpages for segments 1 and 2 entitled “DIY Optical Internal Hi Hat Controller” (Exs. 1015 and 1017) (collectively, “YouTubePost”);
2. U.S. Patent No. 7,473,834 (“Yoshino ’834”) (Ex. 1006);

3. U.S. Patent No. 7,294,778 (“Susami”) (Ex. 1007);
4. U.S. Patent No. 7,468,483 (“Yoshino ’483”) (Ex. 1008);
5. U.S. Patent Publ. No. 2003/0200860 (“Toda”) (Ex. 1009);
6. Certified Translation of Japanese App. Publ. 2003-167574 (“JP ’574”) (Ex. 1011); and
7. U.S. Patent No. 2,559,276 (“Campbell”) (Ex. 1012).

In addition to the references listed above, Petitioner relies on the declaration of Dr. Joseph A. Paradiso (Ex. 1002) and the declaration of Mr. Wayne VanDenBroeke (Ex. 1018).

E. Overview of Cited References

1. YouTubePost

YouTubePost is a video that “demonstrate[s] the construction phase of the mechanical housing for the internal optical Hi-Hat controller for an electronic drum set.” Ex. 1013, 2:4–7. The design is “an experimental project gained from information off of Megadrum and off of the Vdrums website.” *Id.* at 2:7–9. As set forth by Petitioner, YouTubePost was not cited or disclosed during prosecution of the ’758 patent. Pet. 10.

2. Yoshino ’834

Yoshino ’834 is assigned to Petitioner and describes an electronic hi-hat cymbal having top and bottom cymbal pads 100 and 200, rod 420 that moves with operation of a foot pedal, and sensor 610. Pet. 14; Ex. 1006, 13:56–63. Yoshino ’834 was considered by the Examiner during prosecution of the ’758 patent. Pet. 14.

3. Susami

Susami is assigned to Petitioner and describes an electronic hi-hat cymbal 1 having upper and lower cymbals 100 and 200, stand 410, foot

pedal 440 and sensor 60. Pet. 15; Ex. 1007, 11:58–62. Susami was considered by the Examiner during prosecution of the '758 patent. Pet. 15.

4. *Toda*

Toda describes an electronic hi-hat cymbal having a core plate 54 and core 55 on a movable shaft 27, over a lower portion 12. Ex. 1009 ¶¶ 28–30. Toda was relied upon by the Examiner as the basis of anticipation rejection during prosecution of the '758 patent. Ex. 1004. In the Notice of Allowance dated May 2, 2014 (Ex.1005), the Examiner stated: “It is noted that the ‘displacement’ of typical prior art systems is not synonymous with Applicant’s ‘position’ (see, for example, the cited art to Toda, paragraph [0081] where displacement per unit time is used to control volume; Applicant’s use of a position-proportional signal is an important distinction).” Ex. 1005, 6.

5. *JP '574*

JP '574 is assigned to Petitioner and describes an electronic hi-hat cymbal that includes upper and lower cymbal pads 100 and 200, foot pedal 500, sensor rubber 503 and sensor pattern 504. Pet. 19. When the pedal 500 is operated, sensor rubber 503 deforms to contact sensor pattern 504, to change the electric resistance of sensor pattern 504, as detected by sound source portion 800. *Id.* (citing Ex. 1011, 75:12–23.)

6. *Yoshino '483*

Yoshino '483 is assigned to Petitioner and describes an electronic high hat cymbal that includes cymbal 7, stand 3, foot pedal, and sensor 11. Pet. 16. Yoshino '483 was considered by the Examiner during prosecution of the '758 patent. *Id.*

7. *Campbell*

Campbell describes a “photoelectric organ” wherein “the tone frequencies are produced by the rotation of a sound track or series of tone patterns between a source of power and a pickup device for further amplification.” Ex. 1012, 1:1–5, 2:7–11.

F. *Proposed Grounds of Unpatentability*

Petitioner and Patent Owner offer differing enumerations of the asserted grounds. Petitioner counts thirteen grounds of unpatentability (Pet. 2–3); however, many of these grounds are compound because they include alternative combinations. For instance, Petitioner’s “Ground 2” asserts obviousness of two claims over a primary reference in combination with any of four references alternatively. *Id.* at 46. Patent Owner expands each alternative Petitioner proposes and, thus, counts twenty-seven grounds. Prelim. Resp. 15–17. We adopt Patent Owner’s enumeration of Petitioner’s grounds (*id.* at Appendix A) because it is more precise and easier to follow. Accordingly, we refer to the asserted grounds as follows.

Ground	Challenged Claims	Statutory Provision	References asserted
1	1, 5–8, 12–19, 21	102	YouTubePost
2	2, 9	103	YouTubePost + Yoshino ’834
3	2, 9	103	YouTubePost + Susami
4	2, 9	103	YouTubePost + Yoshino ’483
5	2, 9	103	YouTubePost + Toda
6	3, 4, 10, 11	103	YouTubePost + Yoshino ’834
7	3, 4, 10, 11	103	YouTubePost + Toda
8	3, 4, 10, 11	103	YouTubePost + JP ’574
9	1–4, 6, 21	102	Yoshino ’834
10	5, 7–19	103	Yoshino ’834 + Toda
11	5, 7–19	103	Yoshino ’834 + Campbell
12	5, 7–19	103	Yoshino ’834 + YouTubePost
13	1, 2, 4, 6, 21	102	Susami

Ground	Challenged Claims	Statutory Provision	References asserted
14	5, 7–19	103	Susami+ Toda
15	5, 7–19	103	Susami + Campbell
16	5, 7–19	103	Susami +YouTubePost
17	1–3, 6, 21	102	Toda
18	5, 7–19	103	Toda+YouTubePost
19	5, 7–19	103	Toda+Campbell
20	1–3, 6, 20	102	JP ’574
21	5, 7–19	103	JP ’574 +Toda
22	5, 7–19	103	JP ’574 +Campbell
23	5, 7–19	103	JP ’574 +YouTubePost
24	1, 2, 6, 20, 21	102	Yoshino ’483
25	3-5, 7–19	103	Yoshino ’483 + Toda
26	3-5, 7–19	103	Yoshino ’483 + YouTubePost
27	3-5, 7–19	103	Yoshino ’483 + JP’574

III. ANALYSIS

A. Principles of Law

Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). At this stage of the proceeding, Petitioner must establish that there is a reasonable likelihood that it will prevail with respect to at least one of the challenged claims. 35 U.S.C. § 314(a).

A claim is unpatentable under 35 U.S.C. § 102 only if every element set forth in the claims is found, either expressly or inherently described in a single prior art reference. *Verdegaal Bros., Inc. v. Union Oil. Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the . . . claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art. *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective evidence of non-obviousness, i.e., so-called secondary considerations such as commercial success, long felt but unsolved needs, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). The obviousness inquiry further requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)).

“To satisfy its burden of proving obviousness, a petitioner cannot employ merely conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380–81 (Fed. Cir. 2016) (citing *KSR*, 550 U.S. at 418). The factual inquiry into the reasons for combining references “must be thorough and searching, and the need for specificity pervades.” *In re NuVasive, Inc.*, 842 F.3d 1376, 1381–82 (Fed. Cir. 2016). A determination of obviousness cannot be reached where the record lacks “explanation as to how or why the references would be combined to produce the claimed invention.” *TriVascular, Inc. v.*

Samuels, 812 F.3d 1056, 1066 (Fed. Cir. 2016); *see also NuVasive*, 842 F.3d at 1382–85; *Magnum Oil*, 829 F.3d at 1380–81.

B. Claim Construction

We interpret claims of an unexpired patent using the broadest reasonable interpretation in light of the specification. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). Under the broadest reasonable construction standard, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). The claims, however, ““should always be read in light of the specification and teachings in the underlying patent,”” and “[e]ven under the broadest reasonable interpretation, the Board’s construction ‘cannot be divorced from the specification and the record evidence.’” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (citations omitted). Further, any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). In the absence of such a definition, limitations are not to be read from the specification into the claims. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

We construe claim terms to the extent necessary for our analysis on whether to institute a trial. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (explaining that only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy). Consequently, we address below Petitioner’s construction of the claim limitation “wherein an electrical signal generated by the foot

pedal control module is proportional to the position of the control shaft relative to the foot pedal control module.” We further address that limitation’s constituent term “proportional.” We determine that construction of any additional terms is unnecessary for our analysis on whether to institute the requested *inter partes* review, and therefore, do not construe any additional terms below. *See Vivid Techs.*, 200 F.3d at 803.

1. *wherein an electrical signal generated by the foot pedal control module is proportional to the position of the control shaft relative to the foot pedal control module*

Independent claims 1 and 8 recite: “wherein an electrical signal generated by the foot pedal control module is proportional to the position of the control shaft relative to the foot pedal control module.” Ex. 1001, 5:32–34, 6:2–6. Independent claim 15 similarly recites: “wherein the foot pedal control module is configured . . . to generate an electrical signal that is proportional to the position of the control shaft relative to the foot pedal control module.” *Id.* at 6:34–39. Petitioner’s sole claim construction argument seeks to construe the electrical signal recited in these limitations as “an effective resistance of an optical detector that changes as a plunger moves relative to the detector.” Pet. 8. In support of its construction, Petitioner cites the ’758 patent’s description that the “[m]otion of the plunger 116 moves the shutter 118 . . . across the light path between the light source 126 and the optical detector 128, changing the effective resistance presented to the drum synthesizer.” *Id.* at 7–8 (citing Ex. 1001, 4:42–46).

Patent Owner does not address the substance of Petitioner’s construction, and instead asserts that the Petition “fails to apply its own proposed construction in the grounds set forth.” Prelim. Resp. 4.

Having reviewed the evidence cited by Petitioner and in light of the foregoing principles of law, we are not persuaded by Petitioner's argument and do not adopt Petitioner's proposed construction. Claim 1 does not recite an optical detector, a plunger, or any motion between them. Although independent claims 8 and 15 each recite optical detectors, neither claim recites a plunger. Petitioner's construction would have us import an optical detector into claim 1, as well as a plunger and movement relative to an optical detector into each of claims 1, 8, and 15.

Petitioner offers no persuasive evidence that these limitations must be included in the independent challenged claims. First, the Specification's description of a spring-loaded plunger 116 is explicitly related to "one embodiment." Ex. 1001, 4:21–25. We will not limit artificially these claims to this embodiment. Second, dependent claim 5 recites that the position detector of claim 1 comprises an optical detector, claim 6 recites that the position detector comprises a mechanical shutter, and claim 7 recites that the position detector comprises a light source. These limitations require that independent claim 1, from which claims 5–7 depend, is necessarily of broader scope and not limited to an optical detector. Similarly, inclusion of an optical detector in independent claims 8 and 15 evinces patentee's intention to not limit claim 1 to only optical detectors. Third, dependent claim 16 recites that the position detector of claim 15 comprises a plunger, thereby indicating that the position detector recited in independent claim 15 is not limited merely to a plunger.

We thus determine that Petitioner's proposed construction would require us to redraft the independent challenged claims—a redrafting that we decline to undertake. *See In re Van Geuns*, 988 F.2d at 1184 (holding that,

in the absence of a special definition, limitations are not to be read from the specification into the claims). Accordingly, we do not adopt Petitioner's proposed construction.

2. *proportional*

The limitations of the independent challenged claims discussed above recite the constituent term “proportional,” requiring that the electrical signal generated by the foot pedal control module be *proportional* to the position of the control shaft relative to the foot pedal control module. *See supra* Section III.B.1. Neither Petitioner nor its declarant Dr. Paradiso address the scope of this term. *See generally* Pet.; *see also generally* Ex. 1002. Patent Owner, however, contends that “[p]roportional’ means having a constant ratio or relation,” citing a dictionary definition for support. Prelim. Resp. 5 (citing Ex. 2002) (dictionary.com definition of proportional as, *inter alia*, “having the same or a constant ratio or relation”).

Having reviewed the intrinsic and extrinsic evidence of record, we construe the claim term “proportional” as requiring a constant relationship, such as, for example, a linear relationship. Turning first to the intrinsic evidence, the claims and Specification of the '758 patent do not elaborate on nature of the control signal generated by the foot pedal control module beyond describing one embodiment in which the signal is “proportional to the plunger 116 position to the drum synthesizer through the cables.” Ex. 1001, 4:30–33. The prosecution history also does not explicitly define the term “proportional;” however, the Examiner relies on the “position-proportional signal” as a reason for allowance of the claims. Ex. 1005, 6. Although extrinsic evidence “is generally of less significance than the intrinsic record” in matters of claim construction, here, certain extrinsic

evidence informs our construction in the absence of a more fulsome intrinsic record. *Wi-LAN, Inc. v. Apple Inc.*, 811 F.3d 455, 462 (Fed. Cir. 2016). The dictionary definition Patent Owner proffers supports our construction of “proportional” as requiring a constant relationship. Ex. 2002.

Our understanding of this term is further informed by a relevant technical dictionary, namely *The Authoritative Dictionary of IEEE Standards Terms*. Institute of Electrical and Electronics Engineers, *The Authoritative Dictionary of IEEE Standard Terms* (7th ed., IEEE Press 2000) (Ex. 3001). The *IEEE* dictionary defines “proportionally” by citing “linearity” and linearity as: “linearity (1) (analog computer) A property of a component describing a constant ratio of incremental cause and effect. *Proportionality* is a special case of linearity in which the straight line passes through the origin. . . .” Ex. 3001, 690, 880. Also, relevant in light of the claimed control signal, the *IEEE* dictionary defines a “proportional amplifier” as “[a]n amplifier in which the output is a single value and an approximately linear function of the input over its operating range” and a “proportional control action” as “[a] control mode designed to provide a linear relationship between the controller output and input, assuming both are within normal range.” *Id.* at 879. These definitions show the common understanding that usage of term “proportional” when used to describe an electrical signal indicates the signal maintains a constant relationship, such as, for example, a linear relationship.

Accordingly, in light of the foregoing intrinsic and extrinsic evidence, we construe the claim term “proportional” as requiring a constant relationship, such as, for example, a linear relationship.

C. Anticipation Grounds

Grounds 1, 9, 13, 17, 20, and 24 each assert that independent claim 1 is anticipated by the respective cited reference. Pet. 19–33, 48–53, 56–61, 64–70, 72–78, 80–83; *see also supra* Section II.F. (enumeration of asserted grounds). Having reviewed Petitioner’s analysis and evidence in support of these grounds, we determine for the following reasons that none of these grounds addresses sufficiently the proportionality of the electrical signal recited in claim 1.

1. YouTubePost

In ground 1, based on YouTubePost, Petitioner asserts merely that a first screenshot shows an “electrical signal on an oscilloscope at a first value proportional to shaft position A relative to the foot pedal control module” and a second screenshot taken two seconds later shows an “electrical signal on the oscilloscope at a second value proportional to shaft position B.” Pet. 32–33; *see also id.* at 26–27. Petitioner and its declarant Dr. Paradiso further cite a portion of YouTubePost in which the narrator states, “[a]nd as I step down, the oscilloscope follows the action of the Hi-Hat. That is the voltage varying on the output. I can move up and down quickly or I can modulate it slowly with my foot.” *Id.* at 31 (citing Ex.1013, 5:25–6:1, 6:22–7:1); Ex. 1002, 25, 29–30.

Patent Owner contends, “The quoted language from the YouTubePost says nothing about the linearity, let alone the proportionality, of the relationship between the shaft position and the output signal.” Prelim. Resp. 6. Patent Owner further asserts that the cited statement of the narrator “does not mean that the signal varies linearly or proportionally to the movement of the shaft.” *Id.*

Upon review of the arguments and evidence cited, we determine Petitioner has not addressed sufficiently how the YouTubePost discloses that the electrical signal proportional signal generated by YouTubePost's foot pedal control module is *proportional* to the position of the control shaft relative to the foot pedal control module. A claim is unpatentable under 35 U.S.C. § 102 only if every element set forth in the claim is found, either expressly or inherently described in a single prior art reference. *Verdegaal Bros.*, 814 F.2d at 631. Here, the cited portions of YouTubePost and Petitioner's corresponding argument, at best, show only that the electrical signal generated by YouTubePost's foot pedal control module can be toggled between two positions, either quickly or slowly. Pet. 26–27, 31–33. Dr. Paradiso's testimony on this issue is unavailing because it merely repeats the statements of the Petition. *Compare id.*, with Ex. 1002, 25, 29–30.

Taken together, Petitioner's argument and Dr. Paradiso's testimony do not show in the record before us how the cited portions of YouTubePost expressly or inherently describe the control module's signal having a constant relationship such as a linear relationship (i.e., being proportional) due to the position of the control shaft relative to control module. *See also* Ex. 1005, 6 (Examiner's statement relying on the "position-proportional signal" as a reason for allowance of the claims). This claimed detail may not be omitted from Petitioner's anticipation analysis. *Richardson v. Suzuki Motor Co.*, 868 F.2d at 1236 ("The identical invention must be shown in as complete detail as is contained in the . . . claim.").

2. Yoshino '834

In ground 9, based on Yoshino '834, Petitioner cites Yoshino '834's disclosure of three states of coil spring 615 when it is depressed due to the

top cymbal pad section 100 pressing down upon the spring. Pet. 50–52 (citing Ex. 1006, 27:44–47, 29:18–56). Petitioner’s argument, however, does not explain sufficiently in the record before us how the cited three states of coil spring 615 disclose, either expressly or inherently, the control module’s signal having a constant relationship such as a linear relationship (i.e., being proportional) due to the position of the claimed control shaft relative to control module.

3. *Susami*

In ground 13, based on Susami, Petitioner cites Susami’s disclosure of an electrical resistance value and “numeric digitization of the resistance value.” Pet. 59–61 (citing Ex. 1007, 8:57–59). Petitioner’s argument, however, does not explain sufficiently in the record before us why Susami’s resistance value discloses, either expressly or inherently, the control module’s signal having a constant relationship such as a linear relationship (i.e., being proportional) due to the position of the claimed control shaft relative to control module.

4. *Toda*

In ground 17, based on Toda, Petitioner contends that “Toda expressly describes detecting the number of switches SW1-SW4 that are turned on at any given instant (due to full, no or intermediate pedal pressing) to determine the tone color of sound for a detected percussion strike (i.e., strike detected by percussion sensor 14).” Pet. 68, 70 (citing Ex.1009, 77:1–25). Petitioner’s argument, however, does not explain sufficiently in the record before us how the cited three states of foot pedal pressing (e.g., “full, no or intermediate pedal pressing”) disclose, either expressly or inherently, the control module’s signal having a constant relationship such as a linear

relationship (i.e., being proportional) due to the position of the claimed control shaft relative to control module. *See also* Ex. 1005, 6 (Examiner’s statement relying on the “position-proportional signal” as a reason for allowance of the claims over Toda).

5. *JP ’574*

In ground 20, based on JP ’574, Petitioner cites JP ’574’s disclosure that “the degree to which the pedal portion 500 is operated is detected through the resistance value that changes depending on the position of the pedal plate 502, where the change in the resistance value is detected as a change in voltage.” Pet. 78 (citing Ex. 1011, 80:1–7.) Petitioner’s argument, however, does not explain sufficiently in the record before us why JP ’574’s resistance value discloses, either expressly or inherently, the control module’s signal having a constant relationship such as a linear relationship (i.e., being proportional) due to the position of the claimed control shaft relative to control module.

6. *Yoshino ’483*

In ground 24, based on Yoshino ’483, Petitioner relies upon Yoshino ’483’s disclosure that “the vertical displacement of the cymbal 7 can be measured through the change in resistance value.” Pet. 82–83 (citing Ex. 1008, 15:31–36). Petitioner’s argument, however, does not explain sufficiently in the record before us why Yoshino ’483’s resistance value discloses, either expressly or inherently, the control module’s signal having a constant relationship such as a linear relationship (i.e., being proportional) due to the position of the claimed control shaft relative to control module.

Petitioner thus fails to show in the record before us a reasonable likelihood of success in challenging claim 1 as anticipated by any of the cited references for the reasons set forth above. Petitioner's arguments in ground 1 regarding independent claims 8 and 15, repeat its allegations regarding claim 1. Pet. 33–44. For the same reasons discussed above, Petitioner fails to show in the record before us a reasonable likelihood of success on ground 1 challenging independent claims 8 and 15 as anticipated.

In each of Petitioner's anticipation grounds, Petitioner's analysis of the challenged dependent claims refers back to its analysis of the corresponding independent claim and does not further address the proportionality of the signal recited therein. Pet. 44–45, 53–55, 61–62, 71, 78–79, 83–84. Having found Petitioner's analysis of independent claims 1, 8, and 15 to be insufficient, we find for the same reasons that Petitioner fails to show in the record before us a reasonable likelihood of success on grounds 1, 9, 13, 17, 20, and 24 challenging dependent claims as anticipated.

D. Obviousness Grounds

Petitioner's obviousness analysis in grounds 2–8, 10–12, 14–16, 18, 19, 21–23, and 25–27 does not address the proportionality recited in independent claims 1, 8, and 15 beyond the contentions discussed above in the context of anticipation. Pet. 46–47, 55–56, 63, 71–72, 79–85; *see also supra* Section II.F. (enumeration of asserted grounds). Accordingly, we find for the same reasons discussed above that Petitioner fails to show in the record before us a reasonable likelihood of success on its obviousness grounds 2–8, 10–12, 14–16, 18, 19, 21–23, and 25–27.

IV. SUMMARY

Petitioner has not demonstrated a reasonable likelihood of prevailing on its challenges to any one of the challenged claims.

V. ORDER

It is, therefore,

ORDERED that the Petition is *denied* and no trial is instituted.

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